DOCUMENT RESUME

ED 123 991 HE 007 794

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TITLE The Development of the Data Base for "Student Aid: Description and Options". SRI Project 2158.
INSTITUTION Stanford Research Inst., Menlo Park, Calif. Educational Policy Research Center.
SPONS AGENCY Office of the Assistant Secretary for Education (DHEW), Washington, D.C.
REPORT NO EPRC-2158-21
PUB DATE Nov 75
CONTRACT OEC-0-72-5016
NOTE 45p.

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS *Data Analysis; *Data Bases; *Data Collection; Data Processing; Decision Making; Development; Educational Finance; Emancipated Students; *Higher Education; Information Sources; Organization; *Student Financial Aid; Student Loan Programs; Students; Tuition Grants; Veterans

ABSTRACT

What problems are involved in the development and organization of data sources used in a research project on student aid? Problems faced are: (1) using data from sources that had combined information into different categories; (2) incomplete data on a topic; (3) the disparity in the numbers of students or dollars reported by different data sources; and (4) the formulation of categories. Data used are from dependent and independent students, veterans, Guaranteed Student Loan Program, Basic Educational Opportunity Grant Program. Discussion of these problems indicate the arbitrary decisions necessary in building a data base from existing sources of information. (Author/KE)

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THE DEVELOPMENT OF THE DATA BASE FOR "STUDENT AID: DESCRIPTION AND OPTIONS"

Research Note
EPRC 2158-21

Prepared for:

OFFICE OF THE
ASSISTANT SECRETARY FOR EDUCATION
DEPARTMENT OF HEALTH, EDUCATION
AND WELFARE
WASHINGTON, D.C. 20202

CONTRACT OEC-0-72-5016

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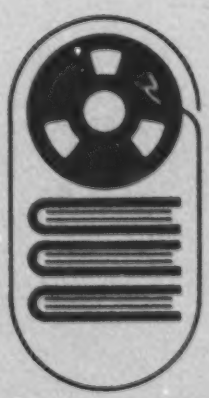

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SRI Project 2158 *November 1975*

Educational Policy Research Center

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I INTRODUCTION

The development and organization of the data sources used in "Student Aid: Description and Options" (Lee et al., 1975)* demand explanation on at least two counts. First, readers must know what assumptions and definitions were used so they may judge the validity of the results. Second, the discussion provides a case study in the development of a national data base from existing sources of information.

The problems we faced can be summarized in four categories. The first problem was using data from sources that had combined information into different categories. A comparison of the definitions used by the Veterans Administration and HEW illustrates the problem. The Veterans Administration uses categories such as "hospital training" and "below college level," which are not compatible with any of the HEW categories.

The second problem resulted from incomplete data on a topic. The information on independent students suffers from this deficit. We wanted to know how many independent students there are, where they attend college, what their income is, and how much student aid they receive, but there are little data available relative to these questions.

The third problem was the disparity in the numbers of students or dollars reported by different data sources. In some instances, such as the number of students in each income category, we included alternative distributions. In other instances we took averages, and in still others we used numbers from the most reliable source. In this last case, for

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*A list of references is appended to this report.

example, we used Higher Education General Information Surveys (HEGIS, 1973) enrollment data throughout the analysis even though other enrollment data were available.

The fourth problem was the formulation of our own categories. In some instances the categories were dictated by the data; at other times we were able to build categories that were complementary to our analysis. The latter case can be illustrated in our estimations of Guaranteed Student Loans (GSL). These awards go to graduate students, whom we excluded from our study, and to students in proprietary schools for whom there are little enrollment data. Some GSL loans are also provided by institutional lenders, which limits eligibility for the funds. For the purposes of our analysis, we excluded the GSL loans awarded to graduate students and proprietary students as well as those that were lent by institutions.

The scope and magnitude of the final data base were determined by the information available; these examples indicate the arbitrary decisions necessary in building a data base from existing sources of information. We weighed the alternatives at all points in the process and tried to remain close to our task of providing decision makers with the most helpful and reliable information possible.

Major data sources for our analysis were the Tripartite tape (Fall 1972), the Fiscal Operations tape (Spring 1973), and HEGIS TRNST73B. The Tripartite tape contains information provided by institutional student aid officers on their institutions' Applications to Participate in Federal Student Financial Aid Programs for FY 1973. Aid officers completed the forms in the fall of 1972, giving estimates for the 1972-73 school year. The Fiscal Operations tape contains institutional student aid officer reports on how federal funds in student aid were spent in 1972-73. They were collected in the spring of 1973. We categorized institutions

identified on the Tripartite and Fiscal Operations tapes as public four-year institutions, public two-year institutions, private four-year institutions, and private two-year institutions according to the institutional classification in Fall Enrollment in Higher Education 1972 (Wade, 1974).

U.S. Office of Education (USOE) student aid program data are for FY 1973, with the exception of the Basic Economic Opportunity Grant Program information, which is for qualified applicants as of January 1975. The Fiscal Operations tape provided income distributions of aid recipients, by type of institution, for the College Work Study (CWS), Supplemental Educational Opportunity Grants (SEOG), and National Direct Student Loan (NDSL) programs. The proportions were applied to Factbook (USOE, 1974) state totals for dollars obligated in FY 1972 and allocated in FY 1973. Estimation processes were developed to distribute the GSL dollars, Basic Economic Opportunity Grants (BEOG) dollars, and Institutional Aid dollars by income category and institutional type; Chapters V, VI, and VII discuss the procedures in detail. Chapter VIII discusses the information on veterans benefits; data were extracted from the FY 1973 Veterans Summary tapes (1975).

II CATEGORIZATION OF INSTITUTIONAL TYPES

The Tripartite and Fiscal Operations tapes classified institutions of higher education by five institutional types: university, other four-year, two-year, vocational, or other. Control was categorized as public, private, or proprietary. To make the classification system compatible with information from HEGIS* and other sources, the SRI staff combined the data into four categories: public-four, public-two, private-four, private-two. In the first step of the grouping process, institutions categorized as university or other four-year on the Tripartite and Fiscal Operations tapes were combined as four-year institutions, and the remainder were classified as two-year institutions. Private control and proprietary control were combined to form the private category.

An additional disparity between Office of Education data and the Tripartite and Fiscal Operations tapes appeared in the identification and classification of branch campuses. For example, when student aid data from the Tripartite or Fiscal Operations tapes were used with enrollment data from HEGIS, student aid was shown in institutional categories where there were no enrolled students.

The second step of the grouping process alleviated this problem; each institution on the Tripartite and Fiscal Operations tapes was classified as one of the four SRI types according to its categorization in Fall Enrollment in Higher Education 1972.

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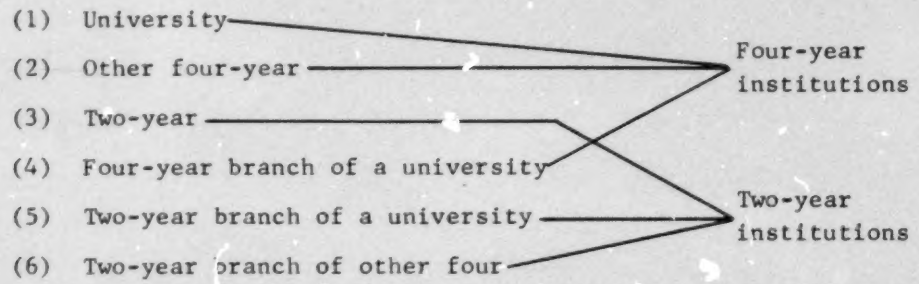
*HEGIS categorizations, for example, do not list "vocational" and "other" institutional types or "proprietary" control.

Tripartite and Fiscal Operations Tapes	SRI
Institutional type	
University	Four-year
Other four-year	
Two-year	Two-year
Vocational	
Other	
Control	
Public	Public
Private	Private
Proprietary	

III AGGREGATE FINANCIAL NEED OF DEPENDENT STUDENTS

HEGIS TRNST73B provided full-time equivalent (FTE) undergraduate degree enrollment for Fall 1972 by states and institutional types. HEGIS does not differentiate between dependent and independent students. All full-time and one-third of the part-time students were included in our FTE enrollment figures; the percentages of independent students in each institutional category are presented in Chapter IV.

HEGIS categorizes institutions into six types: (1) university, (2) other four-year, (3) two-year, (4) four-year branch of a university, (5) two-year branch of a university, (6) two-year branch of other four. The SRI staff categorized (1), (2), and (4) as four-year institutions and the remainder as two-year institutions, as shown below.



The numbers of dependent students in each income category by type of institution in each state were produced by multiplying the HEGIS enrollment times the proportion of dependent students in each institutional type and income category--$0-$5,999, $6,000-$8,999, $9,000-$11,999, and $12,000 and above--as reported on the Tripartite tape. Income intervals reflected adjusted gross income.

Procedures for the alternative income distributions of dependent students, the midrange estimation and the Freshman Norm estimation, are discussed in the following sections of this chapter.

Cost of attendance for dependent students by state and institutional type was produced from Tripartite and HEGIS data. Cost equals the institutional total cost of tuition and fees, books and supplies, plus meals and housing. Tuition data were obtained from HEGIS, and the remaining cost items were extracted from the Tripartite tape. These totals were weighted by enrollment in each institution to arrive at a weighted average cost for each institutional type.

Gross financial need, G, for dependent students, D, was determined by subtracting the expected parental contribution and self-support from the cost for dependents:

$$[DNeed_G = Cost_{(D)} - (\text{parental contribution} + \text{self-support})] \quad .$$

Net need, N, included student aid:

$$[DNeed_N = Cost_{(D)} - (\text{parental contribution} + \text{self-support} + \text{student aid})] \quad .$$

Expected parental contribution figures were obtained from the College Scholarship Service (CSS, 1975, Table 2). CSS also supplied the self-support figures: A dependent student's average contribution was $460 if he attended a two-year school and $510 if he attended a four-year school.

Midrange Estimation of Income Distribution for Dependent Students

The midrange estimates of the income distribution for students at each type of institution in each state were developed by comparing the financial aid officers' estimates with the census bureau estimates of the population having dependents of college age. Adjustments to the

aid officers' estimates were made from a variety of sources, including reports from the American College Testing Program (ACT), the College Entrance Examination Board (CEEB), the CSS, and data from the Basic Educational Opportunity Grant (BEOG) program. ACT and CEEB have published reports on the family incomes of students participating in their testing programs in individual states, and the "Annual Institutional Summary Data Service Report" (CSS, 1974) contains summary data on students filing the Parents Confidential Statements and Student Financial Statements. A limited number of statewide financial aid studies were also available, as well as other reports from state agencies on the financial circumstances of students. All these sources were included, when available, to obtain the midrange income distribution for a state. The data available for one state were not necessarily comparable to the information available for another state. While the estimates are based on empirical data, no single ratio or method was applied to all states.

Freshman Norm Income Distribution: Fall 1974

The Freshman Norm Study included only those students who were full-time, first-time enrollees in colleges. At the institutional level, inclusion was based on the response rate to the ACE's Student Information Form (SIF). The required minimum student response rate varied by institutional type: 85% in four-year colleges, 75% for universities, and 50% for two-year colleges. Selections of the qualified institutions were made employing procedures to ensure the representativeness of the sample. The income distribution was derived from the Student Information Form. The SIF is a student self-report form, and it should be noted that a "regression to the mean" phenomenon has been observed in student self-reports of family income: Low income students tend to overestimate their family's income, and high income students tend to underestimate

family resources (California State Scholarship and Loan Commission, 1972; College Entrance Examination Board, 1971 and 1972).

The Freshman Norm information was not available on a state-by-state basis. There were regional breakdowns, however, and the states were categorized as shown in Table 1.

Table 1

REGIONAL GROUPING OF STATES

Region	States
East	Connecticut; Delaware; District of Columbia; Maine; Maryland; Massachusetts; New Hampshire; New Jersey; New York; Pennsylvania; Rhode Island; Vermont
Midwest	Illinois; Indiana; Iowa; Kansas; Michigan; Minnesota; Missouri; Nebraska; North Dakota; Ohio; South Dakota; Wisconsin
South	Alabama; Arkansas; Florida; Georgia; Kentucky; Louisiana; Mississippi; North Carolina; South Carolina; Tennessee; Virginia; West Virginia
West	Alaska; Arizona; California; Colorado; Hawaii; Idaho; Montana; Nevada; New Mexico; Oklahoma; Oregon; Texas; Utah; Washington; Wyoming

The Freshman Norm income categories were also regrouped to match the SRI study format, as shown below.

SRI Income Category	Freshman Norm Income Category
$0 to $5,999	<$3,000 + ($3,000-$3,999) + ($4,000-$5,999)
$6,000 to $8,999	($6,000-$7,999) + 1/2($8,000-$9,999)
$9,000 to $11,999	1/2($8,000-$9,999) + 4/5($10,000-$12,499)
$12,000 and above	1/5($10,000-$12,499) + sum of remaining categories

This formula assumes that students were distributed equally within each income category; that is, in the $8000-$9999 interval, it was assumed that 50% of the students were in the $8000-$8999 sector, and 50% were in the $9000-$9999 sector.

Parental income by region and institutional type, as estimated from data in The American Freshman: National Norms for Fall 1974 (Astin et al., 1974, pp. 52 and 88), is shown in Tables 2 and 3.

Table 2

ESTIMATED PARENTAL INCOME, BY REGION: 1974-75

	Distribution in Percent			
Estimated Income	East	Midwest	South	West
$0 to $5,999	11.1%	7.7%	13.1%	11.2%
$6,000 to $8,999	9.9	8.9	10.1	9.9
$9,000 to $11,999	16.7	17.0	15.3	16.1
$12,000 and above	62.3	66.4	61.5	62.8
Total	100.0%	100.0%	100.0%	100.0%

Table 3

ESTIMATED PARENTAL INCOME, BY INSTITUTIONAL TYPE: 1974-75

	Distribution in Percent			
	Public		Private	
Estimated Income	Two-Year	Four-Year	Four-Year	Two-Year
$0 to $5,999	13.1%	9.1%	8.2%	14.1%
$6,000 to $8,999	11.4	8.7	8.1	11.7
$9,000 to $11,999	18.7	15.6	13.4	17.4
$12,000 and above	56.8	66.6	70.3	56.8
Total	100.0%	100.0%	100.0%	100.0%

Appropriate categories were averaged to produce the income by institutional types for each region. For example, the percent income distribution for public two-year schools in the East is as follows:

$0 to $5,999	13.1%	+	11.1	=	24.2	÷ 2 =	12.1%
$6,000 to $8,999	11.4	+	9.9	=	21.3	÷ 2 =	10.6
$9,000 to $11,999	18.7	+	16.7	=	35.4	÷ 2 =	17.7
$12,000 and above	56.8	+	62.3	=	119.1	÷ 2 =	59.6
Total	100.0%		100.0		200.0		100.0%

This procedure was followed for each institutional type and region, and the data were applied to the states according to the grouping in Table 1.

IV AGGREGATE FINANCIAL NEED OF INDEPENDENT STUDENTS

Determining the aggregate need of independent students entailed three steps:

- Criteria for defining independent students were chosen.
- Methods for determining the number of independent students at each institutional type in each state were developed.
- A method of measuring their aggregate financial need was devised.

Defining Independent Students

There are several definitional criteria for determining who an "independent" student is. We used the BEOG program definition because it incoporates those criteria most widely used in awarding federal, state, and institutional funds. That definition describes an independent student as one who:

- Has not and will not be claimed as an exemption for federal income tax purposes by any person except himself or his spouse for the calendar year prior to the academic year for which aid is requested.
- Has not received and will not receive financial assistance of more than $600 from his or her parents in the calendar years in which aid is received and the calendar year prior to the academic year for which aid is requested.
- Has not lived or will not live for more than two consecutive weeks in the home of a parent during the calendar year in which aid is received and the calendar year prior to the academic year for which aid is requested.

Determining the Number of Independent Students in Each State and Institutional Type

Because there is wide variation in estimates of percentages of independent students at different types of institutions, it was decided that national estimates could not be used without biasing the description for many states. The numbers of independent students in each state and institutional type were produced using data from five sources:

- A study by the Southern Regional Education Board (SREB) in 1973-74 (Davis, 1974) giving information of aid administrators' estimates of independent students in each of the 14 SREB states. The data analyzed by SREB are gathered annually on the aid officers' Application(s) to Participate in Federal Student Aid Programs.
- The Student Resource Survey (SRS) developed by the College Entrance Examination Board giving student self-reported information on student demographic characteristics, financial circumstances, and financial aid resources in California, Montana, Oregon, Pennsylvania, and Washington.
- The report on alternative definitions for independent students, Who Is the Independent Student? A Study of the Status and Resources of Independent Students (Nelson et al., 1975).
- Program summary statistics (BEOG, 1975) from the BEOG program on the number of dependent and independent students who had applied for Basic Grants as of January 1974.
- Institutional Summary Data Reports from the CSS (1974) giving information on the number and characteristics of students in various states filing a Parents Confidential Statement (PCS) or a Student Financial Statement (SFS).

A study by the Southern Regional Education Board (Davis, 1974), provided estimates of the percentages of independent students enrolled at various institutional types in each of the 14 SREB states. A summary of the estimates appears in Table 4. The estimates vary widely from state to state and reflect two phenomena--the accuracy or inaccuracy of aid administrators' estimates concerning their student populations and

the real differences of enrollment patterns among southern states. It is difficult to determine which phenomena are applicable in which state.

Table 4

FINANCIAL AID ADMINISTRATORS' ESTIMATES OF PERCENTAGES OF FULL-TIME INDEPENDENT STUDENTS, BY INSTITUTIONAL TYPE, SOUTHERN STATES: 1972-73

Institutional Type	High Estimate	Low Estimate	Mean Estimate
Four-year public colleges	30.7%	12.5%	21.0%
Four-year independent colleges	18.1	3.6	11.0
Two-year public colleges	36.2	10.0	20.9
Two-year independent colleges	18.4	2.5	8.9
Voc/tech/business schools	44.2	11.8	24.2

The data derived from the SRS study and the USOE report (Nelson et al., 1975) reveal a somewhat different pattern of independent student enrollment; that pattern appears in Table 5. The distributions are for averages of independent (and dependent) students enrolled in public and private, two-year and four-year campuses among all states. Data from the Basic Educational Opportunity Grant program (BEOG, 1975) and College Scholarship Service (CSS, 1974) were included to increase the information on those states excluded from the SRS studies and SREB states.

Program summary statistics were obtained from the BEOG officials on the number of dependent and independent applicants by institutional types. However, the data provided only rough estimates because the potential applicant pool excluded juniors and seniors; different percentages of potentially eligible students applied in each state because of the unequal efforts of guidance counselors and financial aid officers.

Table 5

DEPENDENCY STATUS OF FULL-TIME UNDERGRADUATE STUDENTS, BY CLASS LEVEL

	Column Percent			Row Percent		
Class	Dependent	Independent	Total*	Dependent	Independent	Total
Freshman	31.8%	14.2%	28.6%	89.8%	9.2%	100.0%
Sophomore	26.6	21.9	25.7	84.3	15.7	100.0
Junior	23.0	28.4	24.0	78.2	21.8	100.0
Senior	17.1	31.7	19.8	70.5	29.5	100.0
Fifth year	1.6	3.8	2.0	64.4	35.6	100.0
Total	100.0%	100.0%	100.0%			

*Totals may not add because of rounding.

The Institutional Summary Data Reports from the College Scholarship Service also provide rough estimates of the percentages of independent students at each type of institution in each state. These reports supply information on the numbers of students in each state who file either a PCS or an SFS. The first form analyzes the financial circumstances of the dependent student; the latter is for independent students. Like the Basic Grant information, these data lack precision because not all institutions require the PCS or SFS. Rough estimates of the percentages of independent students at each type of institution in each state were derived by comparing the number of PCS and SFS filers by states and institutional types.

By using all of these data sources and comparing the four arrays of percentages, it was possible to estimate the percentages that would most closely approximate reality. These best estimates are displayed in Table 6.

Table 6

ESTIMATED PERCENTAGE OF INDEPENDENT STUDENTS,
BY INSTITUTIONAL TYPE: 1972-73

Location	Public		Private	
	Four-Year	Two-Year	Four-Year	Two-Year
Alabama	21.0%	28.4%	7.0%	8.0%
Alaska	65.0	29.3	27.8	26.7
Arizona	8.0	24.2	18.9	7.3
Arkansas	25.0	22.4	8.0	19.4
California	28.0	34.0	18.0	18.0
Colorado	10.0	37.9	8.5	8.9
Connecticut	12.0	35.6	7.0	8.0
Delaware	21.0	34.7	6.0	3.6
District of Columbia	12.5	35.7	12.6	15.5
Florida	26.7	36.2	18.1	11.0
Georgia	24.0	28.2	10.5	10.0
Hawaii	39.7	28.8	20.5	8.9
Idaho	26.1	29.0	5.0	5.0
Illinois	18.3	35.0	8.0	8.0
Indiana	7.4	20.5	10.5	15.5
Iowa	18.5	22.5	10.0	6.6
Kansas	21.0	20.5	9.5	8.9
Kentucky	25.0	28.2	8.9	13.0
Louisiana	15.8	20.9	10.5	n.a.
Maine	18.0	20.5	7.8	8.9
Maryland	12.5	28.4	6.8	18.4
Massachusetts	15.0	27.9	10.0	10.0
Michigan	14.7	42.0	12.8	8.9
Minnesota	17.6	20.5	5.0	5.0
Mississippi	13.1	11.0	33.6	10.0
Missouri	25.0	28.0	9.5	15.0
Montana	19.2	30.3	11.0	n.a.
Nebraska	21.0	17.4	5.3	8.9
Nevada	20.5	40.0	15.0	n.a.
New Hampshire	26.3	37.0	9.0	8.9
New Jersey	14.0	11.0	23.0	5.0
New Mexico	21.0	40.0	24.0	n.a.
New York	30.2	43.3	15.0	21.0
North Carolina	18.0	28.2	2.5	6.0
North Dakota	15.0	13.0	14.5	n.a.
Ohio	21.0	20.5	5.0	12.0
Oklahoma	12.4	27.0	5.0	21.0
Oregon	21.0	48.0	8.9	5.0
Pennsylvania	9.6	11.4	6.2	6.2
Rhode Island	20.5	25.1	10.0	n.a.
South Carolina	17.5	18.6	6.2	10.0
South Dakota	21.0	14.3	8.2	12.5
Tennessee	21.0	27.0	6.4	12.5
Texas	30.7	24.5	10.5	18.4
Utah	21.9	12.0	9.9	8.9
Vermont	12.7	20.5	13.8	15.5
Virginia	21.5	18.5	8.9	10.0
Washington	15.2	35.0	10.9	n.a.
West Virginia	12.5	10.0	7.5	8.9
Wisconsin	15.0	26.5	10.2	10.9
Wyoming	21.0	12.1	n.a.	n.a.

n.a. = not available.

The numbers of full-time independent students enrolled as undergraduates at each type of institution in each state were obtained by multiplying the total FTE as of Fall 1972 by the appropriate percentages for each state. Data for the total FTE, Fall 1972, came from HEGIS TRNST73B.

Measuring Aggregate Financial Need

To estimate the financial need of independent students, it was necessary to evaluate average direct costs, indirect educational costs, and typical income.

It was assumed that direct educational costs (tuition and fees, books and supplies) for independent students were the same in each institutional type and state as those of dependent students. Direct cost data for dependent students were available on the Tripartite tape, and these items were weighted by the number of independent students at each institutional type in each state. The cost of attendance for independent students were developed by adding maintenance costs to the direct education costs.

Since there were no state-by-state data on the indirect educational costs of independent students (e.g., room and board, medical and dental expenses, and miscellaneous costs), regional and national data were used to estimate maintenance budgets.

The maintenance costs for independent students vary with their marital status, the number of dependents they have, and the location of the institution they attend. Using data from the College Scholarship Service's Institutional Summary Data Service, a distribution of the marital/family circumstances of all independent students was derived. This estimation is displayed in Table 7.

Table 7

MARITAL/FAMILY CIRCUMSTANCES
OF INDEPENDENT STUDENTS

Classification	Percent Distribution
Single, no children	40.7%
Married, no children	36.4
Married, one child	13.1
Married, two or more children	9.8
Total	100.0%

The limited number of classifications shown in Table 7 is not inclusive of the possible combinations of marital/family circumstances, e.g., divorced or separated students with or without dependents or students with large numbers of dependents. However, it suffices because the maintenance expenditures per year for many different circumstances are included within this distribution.

Bureau of Labor Statistics (BLS) standards, by regions and family circumstances, were used to produce weighted average maintenance budgets for all independent students. The "weights" are the percentages of students in each of the four circumstances. The standard is the BLS low budget standard for nine months, or a typical academic year. Using the low standard for 9 months rather than 12 has the impact of providing a minimum estimate of maintenance costs for the independent student. The low budget standards were chosen because they are the ones by which many aid administrators measure independent student costs. Less conservative estimates--the moderate standard for the full year--would nearly double the maintenance budgets for the independent students.

The weighted average budgets for each of five regions are displayed in Table 8. The average for each region was assumed to be the maintenance cost for all independent students at all types of institutions in the particular region.

Table 8

LOW STANDARD OF LIVING, STANDARD METROPOLITAN STATISTICAL AREAS, BY FIVE REGIONS: NINE-MONTH BUDGETS

Classification	North-east	North Central	South	West	Alaska
Single	$2005	$1956	$1902	$2071	$2840
Married, no children	2828	2735	2665	2858	3970
Married, one child	3580	3464	3373	3670	5020
Married, two children	4159	4025	3916	4263	5830
Weighted average	2722	2640	2570	2781	3830

The sum of the weighted average maintenance budget and average direct educational costs equals the total costs for an average independent student. Average financial need can be estimated by subtracting the average annual income from total costs. There are, however, no state-by-state data on the annual incomes of independent students, and the estimates were derived from a variety of national and state data bases. The best estimates of total annual income for an independent student and spouse are displayed in Table 9.

The income distribution shown in Table 9 is for all independent students, regardless of their marital status or number of dependents, at all types of institutions. It is believed that this distribution is an accurate representation of the typical income distribution of independent students at each type of institution in the nation. The data

Table 9

ANNUAL INCOME FOR INDEPENDENT
STUDENT AND SPOUSE

Income Category	Percent Distribution
Less than $3000	40.1%
$3000 to $5999	25.6
$6000 to $7499	9.7
$7500 to $9000	7.4
More than $9000	17.2
Total	100.0%

available indicate only small variations in independent student income distributions by institutional types or states. It was assumed that total income of an independent student and spouse was available to meet maintenance and direct educational costs. This assumption "taxes" 100% of an independent student's income and protects none of the resources for emergency or retirement; this practice is common in determining the ability of independent students to pay for their education. This assumption and the use of the low budget standard have produced a low estimate of financial need for independent students. If the financial aid needs of every independent student in the nation were measured and then summed, the total would undoubtedly be higher than the aggregate estimate produced in this report.

The final step in the process was to aggregate the financial need for independent students at each type of institution in each state in the five regions. This required one final assumption about the distribution of incomes and costs.

Virtually no institutions and certainly no institutional types would have direct costs that, combined with the average maintenance

figures for any region, would exceed $6000. Consequently, it was assumed that, in the aggregate, students with incomes above that level would have no aggregate financial need. The best estimate of the typical income for students with less than a $6000 annual income is the median of the distribution of incomes below that level, which is $2458.

The financial need for a typical independent student with an income less than $6000 is:

average direct costs
+ weighted average maintenance budget
total average educational costs
- average annual income ($2458)
average financial need.

This average financial need is for only those students with incomes less than $6000 because no total average maintenance costs and direct educational costs exceed $6000; the students with incomes above $6000 therefore have no financial need, in the aggregate. Since only 65.7% of the independent students have annual incomes of less than $6000, the total aggregate need for all independent students in any institutional type in any state is produced by multiplying the average financial need by 65.7% of all independent students.

The formula for finding aggregate need of the independent students in a given institutional type in a given state is:

appropriate direct costs
+ appropriate maintenance budget
average total educational expenses
- typical annual income of independent needy students
average financial need of needy students
× 0.657 of all independent students
total aggregate need of independent students.

The formulas for each region are:

Region	Direct Costs	Weighted Average Maintenance Budget	Median of Annual Incomes <$6000	Number of Independent Students with Annual Incomes <$6000
Northeast	[(Direct costs	+ $2722) -	$2458] x	0.657 independent enrollment
North Central	[(Direct costs	+ $2640) -	$2458] x	0.657 independent enrollment
South	[(Direct costs	+ $2570) -	$2458] x	0.657 independent enrollment
West	[(Direct costs	+ $2781) -	$2458] x	0.657 independent enrollment
Alaska	[(Direct costs	+ $3830) -	$2458] x	0.657 independent enrollment

V GUARANTEED STUDENT LOAN PROGRAM

Data for the Guaranteed Student Loan Program were less precise than for other federal programs, and it was necessary to make estimations for distributing the dollars by income categories within institutional types. Information on the amount of GSL loans was available on a state-by-state basis from the Reports and Data Analysis staff of the USOE Division of Insured Loans. Percentages for estimated loans to graduate students and students attending types of schools not included in this study were subtracted from each state's total. The remaining total in each state was treated as available for full-time undergraduate study (see Table 10). It was necessary to assume that loans issued in one state but used in another would be approximately equal in total value among states.

State-by-state income distributions of loan recipients were available for 1971-72 from the Reports and Data Analysis staff (GSL, 1973), but data were not available for different types of institutions within each state. Therefore, it was necessary to estimate the loan dollar distribution among income intervals within types of institutions. The following procedure was used for the colleges and universities. If, for example, 20% of a state's total loans were awarded to students with family incomes of "less than $6000" and 10% of all a state's students with those family incomes were enrolled at private four-year colleges, then those students were assumed to have access to 2% of the total aid (10% of 20%). To the extent possible, the distribution of the dollars was corroborated by data furnished by individual state guarantee agencies and USOE regional offices.

For example, loan volume in Alabama for FY 1973 was $11,180,516. From that amount, we subtracted 13.6%, or $1,520,550, for students

Table 10

ESTIMATED GUARANTEED LOAN PROGRAM VOLUME
IN 1972-73 FOR UNDERGRADUATES ENROLLED
IN COLLEGES AND UNIVERSITIES

Location	GSL Dollars
Alabama	$ 8,642,000
Alaska	122,000
Arizona	4,743,000
Arkansas	2,909,000
California	68,424,000
Colorado	11,345,000
Connecticut	24,349,000
Delaware	798,000
District of Columbia	3,149,000
Florida	18,276,000
Georgia	7,663,000
Hawaii	1,893,000
Idaho	2,788,000
Illinois	36,570,000
Indiana	21,870,000
Iowa	16,311,000
Kansas	8,649,000
Kentucky	5,560,000
Louisiana	6,137,000
Maine	5,548,000
Maryland	12,038,000
Massachusetts	23,593,000
Michigan	15,137,000
Minnesota	20,890,000
Mississippi	6,122,000
Missouri	8,507,000
Montana	3,355,000
Nebraska	7,604,000
Nevada	860,246
New Hampshire	2,279,000
New Jersey	36,727,000
New Mexico*	2,025,000
New York	145,692,000
North Carolina	4,892,000
North Dakota	9,293,000
Ohio	22,450,000
Oklahoma	3,847,000
Oregon	7,151,000
Pennsylvania	73,125,000
Rhode Island	7,354,000
South Carolina*	889,000
South Dakota	5,490,000
Tennessee	6,638,000
Texas	29,774,000
Utah	4,768,000
Vermont	2,712,000
Virginia	10,725,000
Washington	14,903,000
West Virginia	5,251,000
Wisconsin	21,304,000
Wyoming	970,000

*New Mexico and South Carolina have large proportions of their GSL volumes offered through institutions as lenders; therefore, their totals appear smaller than usual. GSL dollars that are controlled by institutional aid administrators appear as institutional aid.

enrolled in vocational schools. Another 9%, or $1,006,246, was subtracted because that is the national estimate of the loans that go to students for graduate study. An additional 0.1%, or $11,181, was subtracted from the total because that amount was loaned to students by colleges acting as lenders and would be reported in the study as institutional funds. This left us with $8,642,539, which was rounded to $8,643,000.

The GSL personnel reported the following percent distribution of loans in Alabama in 1971-72:

Less than $6,000	33.4%
$6,000 to $8,999	19.0
$9,000 to $11,999	15.0
More than $12,000	23.6
Independent students	9.0
Total	100.0%

Multiplying those percentages by $8,643,000 produced these amounts:

Less than $6,000	$2,886,762
$6,000 to $8,999	1,642,170
$9,000 to $11,999	1,296,450
More than $12,000	2,039,748
Independent students	777,870
Total	$9,643,000

The percent distribution of students in those intervals by institutions is:

	Four-Year		Two-Year	
	Public	Private	Public	Private
Less than $6,000	47.1%	25.5%	25.1%	2.3%
$6,000 to $8,999	50.0	17.4	30.4	2.2
$9,000 to $11,999	67.4	12.3	18.8	1.5
More than $12,000	76.3	12.1	10.1	1.5
Independent students	67.6	10.5	21.2	0.7

Dividing the dollars into income intervals by types of institutions produces the following:

	Four-Year		Two-Year		
	Public	Private	Public	Private	Total
Less than $6,000	$1,359,665	$ 736,124	$ 724,577	$ 66,396	$2,886,762
$6,000 to $8,999	821,084	285,738	499,220	36,128	1,642,170
$9,000 to $11,999	873,807	159,463	243,733	19,447	1,296,450
More than $12,000	1,556,328	246,810	206,015	30,595	2,039,748
Independent students	525,840	81,676	164,909	5,445	777,870
Total	$5,136,724	$1,509,811	$1,838,454	$158,011	$8,643,000

A similar procedure was followed for each of the other states, using their income distributions and the GSL data for each state.

VI BASIC EDUCATIONAL OPPORTUNITY GRANT PROGRAM

BEOG officials provided SRI with state-by-state distributions of Basic Grant qualified applicants for two points in the current processing year. A distribution of Basic Grant qualified applicants by state and by institutional type was available for November 30, 1974; for January 7, 1975, the Basic Grant officials provided a distribution of qualified applicants by family income interval and state. Unfortunately, a distribution of qualified applicant family income by types of institutions did not exist; it was therefore necessary to devise a method for developing these estimations. The State of Alabama will be used as an illustration of the process.

Table 11 displays the distribution of Alabama students receiving Basic Grant eligibility by type of institution as of November 30, 1974 (9,282 students), and Table 12 shows the distribution as of January 7, 1975 (11,671 students). Since it was preferable to maximize the estimates of dollars received, thereby minimizing the amount of unmet need, the larger figure was used to make the estimates of total dollars in Alabama; Table 12 also includes these calculations.

The average award was estimated from the maximum award a student with that eligibility index for each type of institution might receive. This maximum was obtained from the BEOG Payment Schedule of Awards for 1974-75. The maximum assumes that all students' budgets exceed $1999 per year, a valid assumption for the college students. However, for some of the other postsecondary students, this estimate may be 10% high.

Table 11

BASIC GRANT RECIPIENTS IN 1974-75, BY INSTITUTIONAL TYPE: ALABAMA

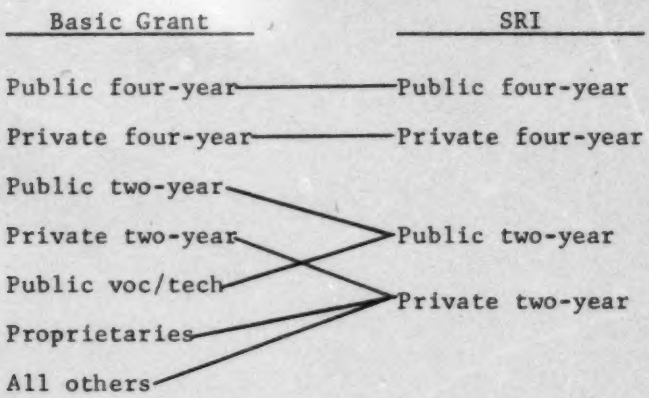
Type	Number	Percent	Average Eligibility Index
Four-year public	3312	35.7%	300
Four-year private	2361	25.4	235
Two-year public	2189	23.6	245
Two-year private	314	3.4	159
Public voc/tech	178	1.9	78
Proprietaries	777	8.4	180
All others	151	1.6	161
Total	9282	100.0%	247

Table 12

ESTIMATED BASIC GRANT DOLLARS AWARDED IN 1974-75: ALABAMA

Type	Students	Percent	Average Award	Total
Four-year public	4,164	35.7%	$806	$ 3,356,184
Four-year private	2,969	25.4	882	2,618,658
Two-year public	2,752	23.6	882	2,427,264
Two-year private	394	3.4	918	361,692
Public voc/tech	222	1.9	918	203,796
Proprietaries	980	8.4	918	899,640
All others	190	1.6	918	174,420
Totals	11,671	100.0%	$860	$10,041,654

To fit the SRI format, the seven types of institutions listed by the Basic Grant officials were recategorized as follows:



Having obtained the maximum estimate of Basic Grant dollars by institutional types, the next step was to estimate the dollars received by students in family income categories: $0-$5,999, $6,000-$8,999, $9,000-$12,000, and $12,000 and above. The January 7, 1975, report provided eligibility indexes for student recipients by 12 intervals. Therefore, appropriate intervals were combined.

With Alabama again used as an example, Table 13 displays the average eligibility indexes for Basic Grant recipients, their family incomes, and their estimated grants.

Table 13

AVERAGE ELIGIBILITY INDEXES FOR BASIC GRANTS IN 1974-75, BY INCOME INTERVAL: ALABAMA

Income Interval	Percent	Eligibility Index	Average Grant
Less than $6,000	57.0%	134	$956
$6,000 to $8,999	21.4	310	806
$9,000 to $11,999	14.4	582	578
More than $12,000	7.2	802	288
Total	100.0%	284	821

It will be noticed that the average grant award in Table 12 was $860 and in Table 13 was $821. This 4% difference is probably a function of averaging and of calculations based on data collected at different times.

The average grant awards by income intervals were multiplied by the number of students in each interval to determine the percentage of dollars received by students in each income interval (see Table 14). It will be noted that the larger total estimate was used.

Table 14

ESTIMATED BASIC GRANT AWARD TOTALS IN 1974-75,
BY INCOME INTERVAL:
ALABAMA

Income Interval	Total Grants	Percent
Less than $6,000	$ 6,657,617	66.3%
$6,000 to $8,999	2,108,747	21.0
$9,000 to $11,999	1,024,249	10.2
More than $12,000	251,041	2.5
Total	$10,041,654	100.0%

After the total dollars awarded to students by income intervals and by institutions were known, a matrix could be devised to apportion the awards among income intervals within institutional types (see Table 15). The assumption underlying this matrix is that the Basic Grant dollars are awarded to students at each institution in proportion to the state proportion within a given income interval. For example, the public four-year college students received $3,356,000 in Basic Grants. Of this amount, $2,225,000 was assigned to students with family incomes of less than $6000. That was 66.3% of the total, a percentage that corresponds to the distributional percentage of students from low income families who were enrolled in public four-year colleges.

Table 15

ESTIMATED BASIC GRANTS IN 1974-75,
BY INCOME INTERVAL AND TYPE OF INSTITUTION:
ALABAMA
(In Thousands of Dollars)

	Four-Year		Two-Year		
Income Interval	Public	Private	Public	Private	Total*
Less than $6,000	$2225	$1736	$1609	$240	$5810
$6,000 to $8,999	705	550	510	76	1841
$9,000 to $11,999	342	267	248	37	894
More than $12,000	84	65	61	9	219
Total	$3356	$2618	$2428	$362	$8764

*All institutions, excluding public voc/tech, proprietaries, and 'other.'

VII INSTITUTIONAL AID

The primary source for the amount of institutional financial aid to students was the Institutional Application to Participate in Federal Student Financial Aid Programs, FY 1974 (APPLCN).* To participate in one or more of three institutionally based federal programs (CWS, NDSL, and SEOG), the Higher Education Amendments of 1968 require that the institutions report and spend for financial aid the amount listed on their APPLCNs under "maintenance of level of support." The following funds are included in the institutions' maintenance level of support: the institutional grants-in-aid and scholarships, including state scholarships that are controlled and administered by the institution; institutional waivers of tuitions and fees; institutional student loans; loans made under the Federally Insured Student Loan Program, Title IV, if the institution acts as a lender; the institutional shares of the United Student Aid Funds, Inc., College Reserve Program, nursing and health professions financial aid programs, NDSL Program, and CWS Program (limited to on-campus institutional share, unless the institution has provided off-campus matching shares from its own funds); institutional employment (exclusive of federal share of CWS Programs); and student wages from employment contracted by an institution with a private concern, such as food services, and laundry and dry cleaning.

The dollar amounts for maintenance level of support for each type of institution were summed for each state, and this amount was considered the total available institutional aid. The maintenance figure can include

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*Data on institutional aid were placed on the Tripartite tape.

awards available to both graduate and undergraduate students. However, since there was no way to estimate the percentage of funds that were used by graduates, all of the maintenance funds were listed as available to undergraduates. This produced an inflated picture of available aid for undergraduates at universities but was preferable to underestimating available aid, since one of our primary purposes was to identify minimum levels of net unmet need.

Another problem with the maintenance figures is that a large percentage of these dollars--nearly 50% in most states--is distributed to students who may or may not have financial need. Therefore, it was necessary to obtain estimates of the students, by family income, who are receiving the aid dollars.

Several statewide financial aid studies have revealed patterns of the distribution of institutional dollars that are consistent from state to state within different types of institutions. The results of a 1973 survey by Southern Regional Education Board staff (Davis, 1974) provided the framework for the national estimates of the institutional aid dollars on the basis of institutional types.

In that study, a representative sample of nearly 100 southern institutions was surveyed. Aid officers were asked to classify their institutional or institutionally controlled aid monies according to the following degrees of availability:

- General Availability--Unrestricted funds generally but not completely based on financial need. This category contains the largest number of applicants qualifying and receiving assistance.
- Limited Availability--Funds typically, but not exclusively, awarded to recipients on the basis of specific characteristics or educational goals. Financial need is considered, but the awards are not assigned strictly on the basis of need.

- Restricted Availability--Funds that are highly restricted by geography, curriculum, secondary school preparation, institutional matriculation, donor preferences of choices, or special and unusual recipient characteristics. Need may or may not be a qualification for an award.

Examples of programs in each category are as follows. General availability includes funds from the federal NDSL, SEOG, and CWS programs, and some state student financial aid programs. Limited availability includes the federal Law Enforcement Education Program, the Health Professions and Nursing Student Assistance Program, and most of the funds reported in this study as guaranteed loan program funds. Restricted availability includes private church and civic group scholarships, scholarships awarded to students for athletic, music, or other special talents, and awards made to welfare recipients or veterans and their dependents.

The SREB survey produced some consistent estimates of the institutional and institutionally controlled funds in these three categories. The percentages for five types of institutions appear in Table 16.

Table 16

PERCENTAGE OF INSTITUTIONAL OR INSTITUTIONALLY CONTROLLED AID FUNDS ACCORDING TO DEGREE OF AVAILABILITY, BY INSTITUTIONAL TYPES

Institutional Type	Degree of Availability		
	General	Limited	Restricted
Four-year public colleges	57%	12%	31%
Four-year independent colleges	67	10	23
Two-year public colleges	52	21	27
Two-year independent colleges	60	15	25
Voc/tech/business schools	56	19	25

After the amount of dollars was obtained for each institutional type in each state, that amount was multiplied by the appropriate percentage

of generally available funds. The resulting product was distributed among all students in the same way that the combined NDSL, CWS, and SEOG dollars had been distributed to students in that type of institution in each state.

The limited and restricted aid dollars are not distributed primarily on the basis of financial need, and it was assumed that students in each income interval had a nearly equal opportunity to receive them. Therefore, these aid dollars were distributed among income categories according to the percentage of enrolled students within the respective intervals. While this estimation lacks the precision that is desirable under optimal conditions, its bias is in the direction of underestimating the impact of financial aid to lower income students.

VIII VETERANS

The benefits to veterans in college during FY 1973 cited in Table 37 of "Student Aid: Descriptions and Options" were estimated using summary tapes from the Veterans Administration. The summary tapes provided information on the type of institution the veteran attended, the state in which he attended, the number of dependents he had, and his status as a full-time or part-time student. Since the tapes did not include information on the educational assistance allowance granted, monthly awards for each state were produced by multiplying the number of veterans by the amount appropriate to their status, as is shown in the monthly allowance schedule in Table 17. Yearly benefits were produced by multiplying the monthly award by a factor of 9.5.

Table 17

MONTHLY EDUCATIONAL ASSISTANCE ALLOWANCE
FOR VETERANS: FY 1973

Student Status*	No Dependents	One Dependent	Two Dependents	More Than Two Dependents†
Full-time	$220	$261	$298	$18
Three-quarter time	165	196	224	14
Half-time	110	131	149	9

*Veterans coded as 4 on the summary tapes were full-time, 3s were considered three-quarter time, and 2s and 1s were half-time.

†The amount shown under two dependents plus the following for each dependent in excess of two.

IX CONCLUSION

The assumptions and estimation techniques explained in this report formed the basis of "Student Aid: Description and Options." The project's early stages were fraught with problems of merging dissimilar data bases, and a review of the data shows limitations in two areas: (1) the financial aid officers' income distribution of students attending their colleges and (2) independent students.

The financial aid officer estimates form the basis of the report because they are the only comprehensive data on both aid recipients and the undergraduate student body at individual campuses in each state; however, when their estimates are compared with other student income distributions, it is apparent that the aid officers underestimated the family incomes of dependent students attending their colleges. Therefore, two alternative income distributions, a midrange estimate and the Freshman Norm estimate, were also included in the report.

The second area for refinement entails independent students. Because little data have been collected about independent students, it was necessary to develop the estimation techniques discussed in this research note. The numbers of independent and part-time students are expected to increase in the coming years; we suggest that more data be collected about these students as well as those attending proprietary schools.

Our other suggestion stems from the frustrating problems we faced when using data from sources that had combined information into different categories. Comprehensive studies such as ours could be completed more effectively if government agencies and research groups would categorize the data according to an agreed-upon system.

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